


Construction of POC diagnostic device

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 An abbreviated version of this protocol was published in Science Advances in Aug 2021

Minimally instrumented SHERLOCK (miSHERLOCK) for CRISPR-based point-of-care diagnosis of SARS-CoV-2 and emerging variants

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Detailed protocol

Setting up the device:

- 1 -3D print the desired miSHERLOCK device and components (heater platform, device housing, saliva collector, plunger, and sample preparation column) using black resin. Files for the duplex, triplex, and quadruplex devices can be found [here](#).
- 2 - Assemble the temperature control, LED, and temperature circuits following the circuit diagram provided, which can be found in Fig. S15 [here](#).
- 3 - Attach heaters to the heater platform and insert the LEDs and temperature control circuit into the miSHERLOCK housing. Images of how to correctly insert them can be found in Fig. S16 [here](#).
- 4 - Cut the 2mm orange acrylic for the transilluminator (2.75 cm × 2.25 cm, 2.75 cm × 3.2 cm, or 2.75 cm × 4.0 cm for the duplex, triplex, or quadruplex transilluminator filter, respectively)
- 4 - Attach the 4mm PES filter to the bottom of the sample preparation column.
- 5 - Insert Whatman gel blotting paper to the correct region on the heater platform.
- 6 - Line the inside of the reservoir on the miSHERLOCK device housing with double-sided tape and attach foil to the underside of the reservoir, making sure that it is fully sealed.
- 7 - Fill each reservoir with 50uL nuclease-free water.
- 8 - insert new SHERLOCK assays to the bottom of the chamber.
- 9 - Connect heaters to the battery power when ready to use.

How to cite: (Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used)

1. de Puig, H. , Najjar, D. , Collins, J. and de Puig, H. (2021). Construction of POC diagnostic device. Bio-protocol Preprint. bio-protocol.org/prep1342.
2. Puig, H. D., Lee, R. A., Najjar, D., Tan, X., Soekensen, L. R., Angenent-Mari, N. M., Donghia, N. M., Weckman, N. E., Ory, A., Ng, C. F., Nguyen, P. Q., Mao, A. S., Ferrante, T. C., Lansberry, G., Sallum, H., Niemi, J. and Collins, J. J.(2021). Minimally instrumented SHERLOCK (miSHERLOCK) for CRISPR-based point-of-care diagnosis of SARS-CoV-2 and emerging variants. Science Advances 7(32). DOI: [10.1126/sciadv.abh2944](https://doi.org/10.1126/sciadv.abh2944)

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